

REMARKS

The claims are 7-17 and 21-26, with claim 7 being in independent form. Claim 7 has been amended to more clearly define what Applicants regard as their invention. Support for the amendment may be found, *inter alia*, on page 2, lines 17-18 and pages 4-5. Applicants respectfully request favorable reconsideration of the subject application in view of the following remarks.

Claims 7-12 and 14 stand rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by Breivik *et al.* (WO 00/01249). Applicants respectfully traverse this rejection.

The present invention relates to a novel method of farm-raising fish of marine species including fry, that are still in the growing stage. The method comprises feeding the marine species of fish a feed of 25-70% by weight of proteins, 5-60% by weight of lipids, 0-40% by weight of carbohydrates, and 0-15% by weight of one or more additional components, wherein the lipids comprise at least one oil selected from the group consisting of marine oils and vegetable oils, wherein said at-least-one oil has been treated with at least one nitrogen-containing compound, wherein the amount of the at-least-one nitrogen-containing compound is sufficient to reduce the oil's anisidine value, and the amount of the at-least-one oil being sufficient to reduce the feed's susceptibility to being degraded through ongoing oxidation, thereby enhancing the feed's ability to either improve the survival rate of the marine species of fish, or improve the growth rate of the marine species of fish.

Breivik relates to feed for salmonids in order to obtain red-colored fish meat, which is dependent on the addition of pigment to the feed. However, this pigment, in most cases astaxanthin, is unstable. The object of Breivik is to protect the pigment, which is the most expensive ingredient in feed for salmonids. Unlike the present invention which relates to feed

for marine species, which are hatched and developed in saltwater, Breivik applies to salmonids, which spawn in freshwater. Salmonids are not included in the term “marine species.”

Applicants note the use of the phrase “other marine species” in the subject application may be somewhat unclear to one with little to no experience in fish farming. However, Applicants argue that the phrase “other marine species” to one skilled in the art would clearly exclude salmon. “Other marine species,” as identified by the Examiner in the Office Action dated September 30, 2008, is used in the context of referring to the recent increased interest in marine species as an alternative to salmon in the aquaculture industry.

One skilled in the art clearly understands that marine fish species does not include salmonids. Marine fish species is defined as fish species that spend their entire life in salt water, whereas salmon are anadromous fish, i.e., born in fresh water, grow into adults in salt water and return to fresh water to spawn. With the Amendment After Final Office Action, dated January 23, 2009, Applicants submitted multiple documents, Attachments A-C, as objective evidence establishing that “marine species” excludes salmon.

In the Advisory Action, the Examiner argued that the use of “marine species” in the preamble was not considered part of the claim limitation. Accordingly, Applicants have herein amended claim 7 to further indicate the intention to limit the claimed invention to apply to feed for marine species of fish.

According to MPEP § 2143.03, all limitations in a claim must be considered in judging the patentability of the claim against those references cited against it. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Applicants submit that claim 7, as amended herein, and all claims dependent thereon, are not anticipated by Breivik and respectfully request withdrawal of the rejection under 35 U.S.C. § 102.

Claims 13, 15-17 and 21-26 stand rejected under 35 U.S.C. § 103(a) for allegedly being obvious in view of Breivik *et al.* (WO 00/01249), with evidence provided by Food Day, Global Gourmet (March 7, 1997). Applicants respectfully traverse this rejection.

In the Advisory Action, the Examiner notes that the oxidation process targeted by the claimed invention is not referred to in the claims. In response, Applicants have amended claim 7 herein to more specifically identify the oxidation process of the present claimed invention, which differs from Breivik. Applicants submit that the present claimed invention is not rendered obvious by Breivik, since the oxidation process targeted by the claimed invention is distinct from the oxidative process targeted in Breivik.

Breivik relates to a method for stabilizing vegetable and animal oils and pigments for a feed for salmonids during production of the fish fodder. Page 1, lines 10-12 and Page 10, lines 1-2. When the fat source in the fish feed reacts with oxygen, oxidation products are formed. Page 2, lines 5-9. The secondary oxidation products are measured by analyzing the anisidine value of the product. Page 2, lines 10-13. As evidenced by the Examples and Figures therein, the invention disclosed in Breivik is directed toward its effects on the anisidine values of the fish oil. As confirmed in “Lexicon of Lipid Nutrition (IUPAC Technical Report),” *Pure Appl. Chem.*, 73(4), 685-744, 689 (2001) (Attachment D to Amendment After Final Rejection dated January 23, 2009), anisidine is a measure of aldehyde production during oxidation of fat, and is used to characterize the oxidative history of fat. It is known by those skilled in the art that aldehydes are indicators of previous oxidative damage. See Charlie Scrimgeour, *Bailey’s Industrial Oil and Fat Products*, Chemistry of Fatty Acids, 6th Ed., Sec. 4.1.3., p. 19 (2005) (Attachment E to Amendment After Final Rejection dated January 23, 2009).

Conversely, as recited in claim 1, the subject invention discloses a method to reduce degradation due to ongoing oxidation, i.e. oxidative stress of the feed, where the measurement relates to the oxygen consumption after production. Example 1 of the subject application shows data regarding the presence and concentration of free radicals in the feed. Page 4, line 24 – page 5, line 3. As disclosed in the specification, “[f]ree radicals are associated with ongoing oxidation; i.e. a high level of free radicals in a sample is associated with a high oxidative stress of that sample.” Page 4, lines 25-27. The example demonstrates that for stored feed samples, oxygen consumption is lower for feed made with oil treated according to the present invention, compared to feed made with untreated oil. Page 5, lines 17-21.

Breivik fails to teach or suggest an invention directed toward the ongoing oxidation of the feed. Rather, it is limited to a method for reducing anisidine values. Unlike the present invention, Breivik neither discloses a method for reducing the concentration of free radicals in the feed, nor refers to ongoing oxidation and oxidative stress. Breivik does not suggest or disclose any information that would lead one to think that the reduction in anisidine value (a measure of previous oxidation) would lead to reduction in the concentration of free radicals (a measure of ongoing oxidation).

Food Day does not remedy the deficiencies of Breivik. The Examiner relies on Food Day for evidence that the omission of carotenoids from the food taught by Breivik would not require undue experimentation on the part of one of ordinary skill in the art, who would have a reasonable expectation that the food without the carotenoids would continue to serve as an acceptable diet for all of cod, halibut and fry. Office Action dated September 30, 2008, page 4. While Applicants respectfully disagree with this statement, even if it were taken as accurate, the combination of Breivik and Food Day does not render the present invention obvious.

As noted above, the present invention relates to a novel method of farm-raising fish of marine species, where one of the advantages is that, by using a treated oil when preparing the feed, the ongoing oxidation in the finished feed is reduced. In this way, the present invention provides a novel solution to the problem of farm-raising marine species fish.

With regard to claims 13, 15-17 and 21-26, the Examiner alleges that one of ordinary skill in the art would have recognized that in using the feed of Breivik for white-colored fish, it would have been obvious to produce the feed without carotenoids. Advisory Action, page 2.

Breivik discloses a method for producing a feed with reduced production loss of the pigment astaxanthin, a very expensive ingredient. The treatment according to Breivik adds additional costs and production steps compared to standard feed processes, but these additional costs are worthwhile because of the costs saved by having to purchase less astaxanthin. Breivik teaches a method whereby the feed producer may use less astaxanthin during production, and yet, still obtain the necessary levels in the finished product.

In contrast, for a feed producer turning out feed for a fish species that does not require carotenoids, there is no incentive to utilize the invention of Breivik because it will increase production costs while not saving other costs to compensate. Accordingly, the producer would not use the more expensive and time consuming production process of Breivik for feed that does not contain carotenoids, i.e. feed for white-fleshed fish, such as cod or halibut.

Applicants acknowledge that one skilled in the art would recognize that cod and halibut are white-fleshed fish, and would not include carotenoids in their diet. Further, Applicants acknowledge that one of ordinary skill would have a reasonable expectation that the feed according to Breivik, but without carotenoids, would serve as an acceptable diet for cod,

halibut and fry. However, despite this, the skilled person would recognize the rationale behind Breivik, e.g., to reduce the amount of carotenoids purchased, and find that, for feed not containing carotenoids, Breivik is cost prohibitive. Therefore, it would not be logical for a person of ordinary skill to modify Breivik in the manner suggested by the Examiner.

The presently claimed invention discloses a new benefit that may be achieved when using a method of producing a feed containing oils treated by urea and/or other amines or amides. That is, the presently claimed invention teaches the unexpected effect of reducing oxidative stress of feed to marine species measured as concentration of free radicals in the feed (Example 1), or measured as avoiding the negative effects of reaction between feed proteins and lipid oxidation products (Example 2). This new benefit may be realized by feed producers and makes increased production costs palatable.

Applicants submit that the combination of Breivik and Food Day, whether considered separately or in any combination, fail to teach or suggest the claimed invention. Accordingly, Applicants submit that the claims are patentable over the cited art, and respectfully request withdrawal of the rejection under 35 U.S.C. § 103(a).

It is respectfully requested that the claims be allowed and the case passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

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